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## The Design Process- Making It Relevant For Students

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## THE DESIGN PROCESS – MAKING IT RELEVANT FOR STUDENTS

**Keith McAllister**

### Abstract

Within the ever-changing arenas of architectural design and education, the core element of architectural education remains – that of the design process. The consideration of ‘how’ to design in addition to ‘what’ to design presents architectural educators with that most constant and demanding challenge of “how do we best teach the design process?”

This challenge is arguably most acute at a student’s early stages of their architectural education. In their first years in architecture, students will commonly concentrate on the end product rather than the process. This is, in many ways, understandable. A great deal of time, money and effort go into their final presentations. They believe that it is “what is on the wall” that is going to be assessed. In an era of increasing speed, immediacy of information and powerful advertising, it is not surprising that students want to race quickly to presenting an end-product.

Recognizing that trend, new teaching methods and models were introduced into the Stage 02 undergraduate studio over the past two years at Queen’s University Belfast, aimed at promoting student self-reflection and making the design process more relevant to the students. This paper will first generate a critical discussion on the difficulties associated with the design process before outlining some of the methods employed to help promote the following:

an understanding of concept, adding realism and value to the design process and finally, getting the students to play to their strengths in illustrating their design process like an element of product and promoting personalization of the design process for each individual student. Frameworks, examples, outcomes and student feedback will all be presented to help illustrate the effectiveness of the new strategies employed in making the design process firstly, more relevant and therefore secondly, of greater value, to the architecture student.

### Keywords

Architectural education, design process, design Studio, student experience.

### Introduction

Currently it is an exciting time in both education and architectural design. Both disciplines face similar challenges, with constant change, uncertainty and increasing complexity set against a backdrop of continuing technological advance.

Yet within this ever-changing setting, the core element of architectural education remains

- that of the design process. It is intrinsic to the subject of architecture. To design, states Salama (2005: 18).

"... is to undertake a series of activities that lead to desired end results."

While this might seem initially straightforward, it highlights an important distinction – it is not only what to design, but how to design that is the crux of the matter.

So the challenge in architectural education is, if teaching design, "how do we best teach the design process?" Commonly students are taught in the system described by Wade (1977: 10) as the "studio method." With regard to Stage 02 Queen's architecture students this is indeed the case. The students are given a place to work. They are then given a series of design problems that increase in complexity over the year. They receive tutorials twice a week during a project, culminating in an end of project crit. Projects vary in length from one week to ten weeks in duration. A project brief is distributed among the students at the start of the project. This would outline the site, context and proposed building criteria alongside the intended Learning Outcomes for that project. At the end of the project, evaluation and assessment of the student's proposed design solution take place.

Understandable, yes. Straightforward, no. For therein lies the main problem in teaching architectural design. The assessment is one that concentrates and focuses on the product of the students' efforts, not necessarily the process. Therefore the very real danger in the studio is that students will concentrate their efforts on the product – the end of project design – and in so doing ignore the development of the essential

skills that will aid them later in their careers. Lawson (2006: 7) summarised this by stating:

"one of the weaknesses of the traditional studio is that students, in paying so much attention to the end product of their labour fail to reflect sufficiently on their process."

Yet it is student self-reflection that we want to promote. So as tutors we have to ask ourselves some fundamental questions: "How should this imbalance be readdressed? What can be done to ensure concentration on product and neglect of process does not happen in our studios?"

Before seeking a solution to a problem it is often beneficial to first study the pathology of that problem. Why do students focus on the product?

At stage 02 there are many contributory factors. These include, understandably, the need to compose an end product for their final review and crit. A great deal of time, effort and money goes into the students' final presentations. They realise that it is what is on the wall and in model form at the end of the project that will be discussed and therefore assessed. Also, at stage 02, the students' communication skills are improving at impressive rates. It is during this year that students are taught how to use a number of Computer Aided Design (CAD) drawing packages. From the outset with their new skills, the students want to produce eye-catching graphic images and so we find ourselves subjected to a barrage of fractal geometric shards in techni-color brilliance, more dystopian than utopian, and simply a celebration of the CAD package itself. Also, in a time of increasing speed, the immediacy of the World Wide Web, mobile phones and powerful advertising, it is unsurprising that students want to

proceed quickly to presenting an end product.

To further complicate matters, the design process is itself a difficult and almost mythical beast. Lawson, (2006: 81) highlights this when stating:

“... we must not expect the design process to be as clear, logical and open a process as the scientific method. Design is a messy business that makes value judgements between alternatives that may each offer some advantages and disadvantages. There is unlikely to be a correct or even optimal answer in the design process.”

So in dealing with the challenge that design itself is subjective, Lawson is asserting that for the design process, there may not even be an optimal solution. If this is the case – how can we as tutors first encourage the students to enter into this “messy business” and then secondly, critically assess this component of a project? As stated by Biggs (1999:149) “We assess to see what students know...” If we cannot accurately and fairly assess, it is unfair and unreasonable to expect students to immerse themselves in the design process. Moreover, if we cannot accurately assess, how can we as tutors best provide useful feedback to our students?

As if that were not enough of a problem, O’Cathain (1982) makes a persuasive argument that design is in fact - illogical.

Subjective, messy and illogical as descriptors of a subject are just about enough to dishearten the tutor, let alone the student. But when just about to throw in the towel, it is worth reminding ourselves of the value of the design process. It is the skill that students will take into their further studies and workplace. Mastery of the design process will allow a practitioner to take on any challenge.

Therefore, one can agree with Lawson (1994: 3) when he states:

“So what should we do to investigate design? Quite simply, we must do all we can.”

So what can be done? The following pages outline two main strategies implemented over the past two years in the Stage 02 Architecture Course at Queen’s University Belfast. These are:

1. Firstly investigating and searching to see what are the strengths and advantages that may be made clear to the students within the complexities and difficulties of the design process. If able to illustrate the importance and advantages of investing into the process, it might help encourage the students to concentrate on it more.

2. Adding value to the design process in the eyes of the student within the studio by making it an area of assessment that plays to the students’ strengths – ironically, that of communicating product. Moreover, add further value to it, by inviting the students to take ownership of their work by personalising the design process as their own.

Student feedback was sought from the current stage 03 students a year after they had been first introduced to the implemented strategies in stage 02. This was in an attempt to evaluate and appraise both how successful these initial strategies were and how they might be made better. On the basis of the feedback received, a new framework was made for a major studio design project for the current stage 02 students. This is described with observations at the end of the paper.

## Promote the Benefits of Investing in the Design Process

"If something is worth doing, it is worth doing well," the adage goes. But unfortunately, it does not expand to say what to do when that something is difficult. In fact, why do it at all? Therefore with the students, it is necessary to "sell" the design process. This can be difficult but it is worth doing. Yes it can be frightening because in effect the student is being asked to enter into the unknown. O'Cathain and Howrie (1994) ably describe this by contending,

"thus the design process is one of devising and experimenting, a process of rapid learning about something that doesn't yet exist by exploring interdependencies of problem and solution, the old and the new."

But therein lies the true excitement of the subject – the unknown. It is also arguably what tertiary level education should and must involve – intellectual uncertainty. As described by Barnett (2007:147),

"If there was no anxiety it is difficult to believe that we could be in the presence of a higher education."

Explaining this to and supporting the students in this might seem overly simple, but it is something that can be overlooked. The students always welcome constant encouragement. Highlighting that, "the most powerful learning occurs when the student is dealing with uncertainty." (Dewey 1938:32) can be a strong motivating factor for many of the stronger students.

## Illustrate the Design Process

With students often being fixated with architectural product, it can be strategically

worthwhile downplaying this element in seminars. Instead, the design process can be promoted. This can be done in many ways. In introductory lectures we were able to illustrate a range of architects' design sketches, concepts and diagrams. These would be accompanied by the minimum number of images of the completed building required to put the design process into context. Asking the students to reflect on how and why a building had been designed in the way it had, proved to be a powerful aid in getting the students to consider the processes undertaken. Schon (1995:79) describes the design process as a "reflective conversation." It is a conversation that students will enter into if invited.

## Explain and Simplify the Design Process

It would be both conceited and false to believe that as tutors we could demystify all of the complexities of the design process in a two-semester studio period for the students. However that is not to say that we should not attempt to make it more accessible to the students.

This was first done last year in the Stage 02 studio by requesting that the students present a concept model for a project in the first semester. This had to encapsulate their "aspiration" for their building, in this case a Seedbank – a research and educational base for promoting meadowland fauna. Purposely it was restricted to twenty centimetres square in area to try and get the students to condense their ideas into one simple model. From this the students were asked to develop a praxis and parti for their design – a simplified diagram encapsulating the essence and organisational devices behind the student's design (Figure 1). Crucially the students were asked at the end of each week to revisit their concept model and update their parti. This was

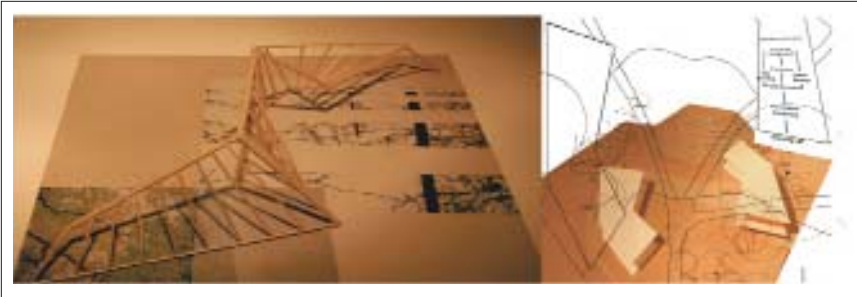


Figure 1: SEEDBANK—  
Concept Model, Praxis  
and Parti Model-Daniel  
Waterstone 2009.  
(Source: Author).

for two reasons, firstly, to encourage self-reflection and refinement and secondly, to avoid a purely linear design model.

The advantages of self-reflection for students in architecture are many, Appraising, prioritising, evaluating and consideration are all useful attributes in the workplace.

Avoidance of a purely linear design model is an important consideration. At first sight a linear model might appear both sensible and even desirable. It would certainly simplify the process and bring a logic and certainty to the process. However in doing so, it oversimplifies. This is both dangerous and limiting, as summarised by Lawson (2006:33) when explaining,

“Many writers have tried to chart a route through the process from beginning to end the common idea behind all these ‘maps’ of the design process is that it consists of a sequence of distinct and identifiable activities, which occur in some predicable and identifiably logical order. Unfortunately... these assumptions turn out to be rather rash.”

Instead the design process is demanding and complex. However, giving the students an

identifiable starting point has merit. While initially appearing prescriptive, the actual concept and its influence becomes the preserve of the student. What the concept is and how it is implemented and integrated into the design is up to the student. Also, developing an understandable parti too has merit. While Schon (1995:78) points out “For a student in the field – the multiplicity of voices is confusing,” the benefits of simplification are well illustrated by the award-winning architect Michael Wilford, who stated that, “I like to see things encapsulated in one small image.” (Lawson 1994:110) Being able to reduce the complex to a simple and coherent diagram shows order and understanding on the part of the student.

### Make the Design Project Process Centered

A simple yet effective method of concentrating the stage 02 students’ minds on the design process was carried out for the first time in 2009 in the second semester. In an eight-week urban design project concentrating on the design of a literacy centre for east Belfast, no building brief was issued until the fourth week. Instead the students had to develop design site strategies for the site based purely on the site’s potential.

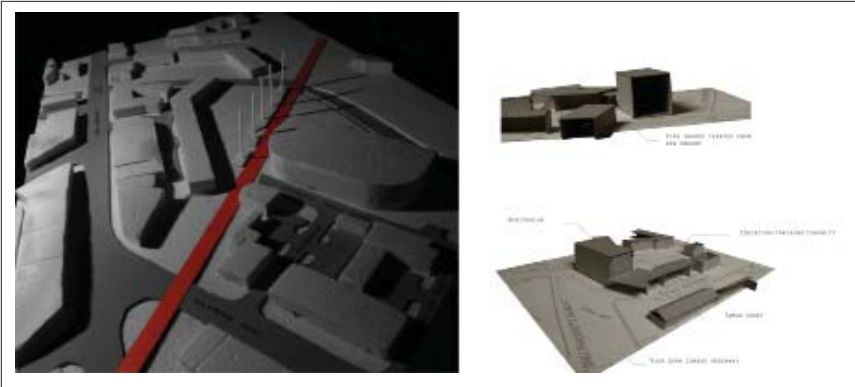


Figure 2: LIERA-C-(IT)-Y Site Strategy and Subsequent Massing Models—Chris Gaule, 2009. (Source: Author).

This initially caused great consternation among the students who repeatedly asked “when are we going to get the building brief?” However, by questioning the weaknesses of the site, the students were able to propose design solutions to the specific site problems (Figure 2).

Simply by putting the product temporarily to one side, the students were able to come up with design possibilities and strategies by asking questions relating to the site. The noted Czech architect Eva Jiricna illustrates the importance of this when she stated,

“The design process is finding the questions: there is always an answer to every question. You have to find the questions and not the answers; then it is only a matter of time to find the answers, but the question is the difficult part.” (Lawson, 1994:48).

For many students, realising that there are always design answers and solutions and that the process is not something to be feared was a release. Getting the students to ask the correct

questions was not overly difficult as that was in part, our responsibility as tutors.

Within this stage and then afterwards, the students were encouraged to use a sequential self-assessment model to help develop their design in terms of process. This was as shown below in (Figure 3). This was carried out at each stage by the students and checked on a weekly basis by the tutors. This led the students to self assess their work on a regular basis, an important benefit as described by Race (2001b: 6),

“Self assessment skills are invaluable in the context of life-long learning and are useful to students in their continuing professional development long after they have gained their university qualifications.”

### Adding Value to the Design Process

If considered important or worthwhile, students, like all of us, are much more likely to apply themselves to any challenge. Two different strategies have been employed in the design



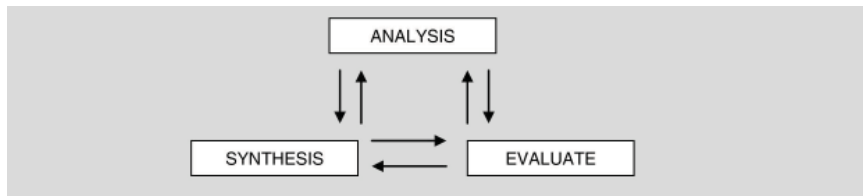


Figure 3: Students Self-Assessment Design Process (After Lawson 2006:40). (Source: Author).

studio over the past two years in an attempt to increase the awareness of the value and benefit to the students of investing in the design process. These are by promoting the design process as if “product” and by trying to individualise the design process for each student.

### Treating the Design Process as a Product

“Assessment defines what students regard as important.” (Brown 2001: 4).

A simple yet effective tool in promoting the design process as important was to make it an element that would be assessed. In the studio, Architectural Design and Architectural Communication are assessed – both are elements that are product based. If adding the design process into the mix as well, we effectively raise its profile in the studio. Also, importantly, if we do indeed “assess to see what students know...” (Biggs, 1999:149), the design process does need to become an element monitored and marked to effectively check and appraise the students understanding of this element. But the question is, how should this be best done?

As the design process is not a clear-cut linear, sequential progression, how is it possible to check its progress? A checklist of benchmarks to be achieved or met would be simply impractical –

how might an assessor know beforehand where a design might lead a student?

A potential solution might be to assess progress from one tutorial to the next. However once again this option is not without problems. Often design is reliant upon the “creative leap” – sometimes planned, sometimes not – an act that propels the designer’s scheme forward to a different level of complexity, inventiveness or resolution. This can happen at any stage of the design – or, it might not happen at all. How can one assess fairly and evenly over a number of weeks when students will work at different rates, in different ways and often in different scales and media. This can be even further complicated by different levels of architectural ambition, with varying “sparks” and “flashes” of creativity? Also, if continuously assessed we run the real risk, with regards to the student that “their want to learn is damaged.” (Race, 2001a: 35).

Instead an alternative method used in the main design projects in the stage 02 studio was to treat the design process as if a product. Students were informed from the outset that their design process would be assessed. It was explained to them that the fairest way of doing this was to ask the students to submit one or two A1 sheets illustrating their process and that these would accompany their main design drawings (Figure 4).



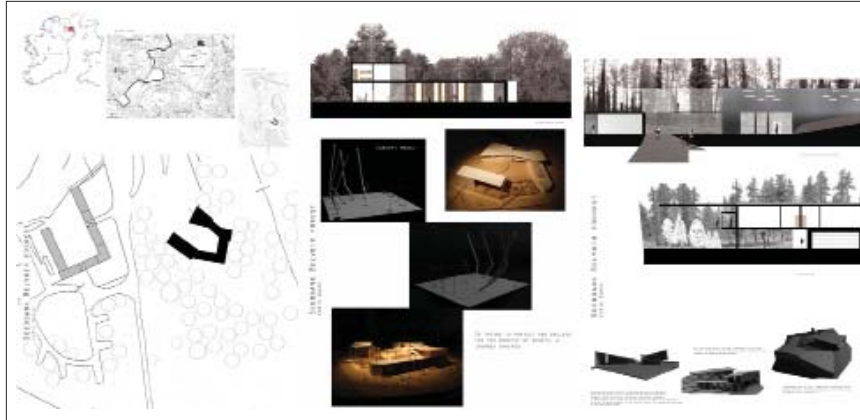


Figure 4: SEEDBANK—Site Location, Site Plan and Process Sheets—Chris Gaule 2009. (Source: Author).

The process sheets would then be assessed alongside the students other drawings and any submitted models at the final review crit. Students would then have the opportunity to describe their process and how that impacted and informed their subsequent design decisions and completed design solution – the final product. Students were specifically asked to include a concept image and parti so that they would have a definite starting point for their process sheets. This also served as a comparative aid for the students if peer reviewing when attending the review crits of their colleagues. Peer assessment skills can be valuable to one in the architectural profession who often has to work in a design team as noted by Race (2001a: 6) when he stated,

“Peer assessment skills are important when as professionals; one is expected to work often in a team scenario.”

However there are further benefits in asking the students to present their process and design development at the end of the project. In order

to do so, the student has to reflect, analyse, evaluate and then consider their process before presenting. This is of great benefit – it was especially pleasing to see the students recording their design sketches and photographing rough working models for that purpose. In doing so the students have to give careful consideration to their process by summarising and editing their design development. The hope is that a student summarising, as stated by Race (2001b: 109), is “a useful learning experience.”

Moreover, treating process as an element of “product” simplifies assessment and feedback for the tutor. It puts the emphasis on the student to communicate this with the resultant added benefit of further development of their communication skills. It allows peer comparison. Importantly, it also facilitates tutors to see whether or not relevant Learning Outcomes are being met as advocated by Brown. (2001: 6).

The production of drawings and models and the opportunity to communicate them in their final

presentation excites many students. Treating the process as if an element of product often motivates the student to engage with the design process. In doing so, these students become involved in a deeper approach to learning than might otherwise be the case.

### Individualize the Design Process for Each Student

Standardisation is an increasingly common trait in contemporary society. This trend also extends now to architecture with accepted styles and organisational rules championed to ensure accepted design propriety. Yet when dealing with individuals, this is potentially dangerous and damaging. Consider the popular backlash against modernism when architectural language became primarily a kit of parts to be borrowed and used as required, rather than a people-centered craft responding to individual need and regional identity. (Frampton, 1992: 314).

What can be forgotten all too easily in the architectural studio is that the students, too, are individuals, with their own personal experiences, hopes and dreams. In effect, the students are our clients, wanting to be excited and engaged. Making a subject of interest to a student can increase their enjoyment and engagement with that subject--so too with the design process.

Specifically, the design process is an area where a student's own values and personal interests can become design generators. A designer's own "preferences and prejudices" can personalise a design, thereby helping both "gain the interest of the student" and making the project appear more relevant to them. (O'Cathain & Howrie, A, 1994) Promotion of the personalisation of a

design project and encouraging the student to "leave their mark" can be an effective method of encouraging the students to embrace the process.

But how can this be done?

To gauge potential strategies for promoting student design personalisation, the current stage 03 students were first asked in a questionnaire:

1. How they felt they were able to personalise their design process, and
2. Where in the design process they felt they were able to best implement this. In particular, the students were asked if they felt if they were able to personalise their work at early stages, especially when using the previously advocated concept, praxis and parti design aids.

With regard to how the students felt they were able to personalise the design process, the majority of the students' responses stated that they felt that they were able to personalise their design work by the following;

- i personally picking the aim and aspiration for their project;
- ii having some flexibility to individualise the parameters of the project;
- iii being able to draw upon their own past experiences;
- iv individualising the methods of making their models and choice of graphics;
- v choosing the initial design generator for their project.

Overwhelmingly, the students described their desire for personal choice, welcoming the opportunity to personalise the design process.

By doing so, they were making it specific to themselves. In particular, choosing the aim and aspiration for the project was stressed as being very important to the students and a vital starting point. This assertion was made very clear when the students described how they actually used and engaged the aids of concept with praxis and parti in their design work. Most noticeably, the majority of the students thought it was important to have a concept, often drawn from personal experience that could be repeatedly referenced during their design work. This then helped inform their later work.

In doing so, the students therefore recognized an important interim stage between concept and the use of praxis and parti – one that would allow their aim, ambition and aspiration for their project to creatively and positively influence their design. This is an important distinction – especially if a concept is going to be something that can inform and aid in later design decisions. An abstract idea unable to be transferred into actual form is of no real use in this regard.

Rather, as depicted in (Figure 5), the students' responses described what they felt was a necessary linkage of concept into their design work, thereby using the concept to help clarify

later design decisions.

What is also noticeable is that the students believe it is the concept stage where they feel that they can most definitely personalize design. It is here that they see their personal choice being most important in helping formulate and individualize their design work. In many ways this makes sense – if able to make their mark at the outset of a project, a student is more likely to follow it through engaged to the end.

This relationship was perhaps most eloquently described by one student (Figure 6) as entering into a dialogue between concept and later design decisions, stating that the shout of the site can be heard by all, but the poetic murmur of the site will be heard and interpreted differently by individuals due to their different backgrounds, experiences and interests. It is this that will then most clearly individualize different students' work.

It was acknowledging this key factor that was used as a generator for a project with the current stage 02 students earlier this year. With the aid of award-winning architect Dominic Stevens, a schedule was developed to help introduce the project. This was developed to allow immediate

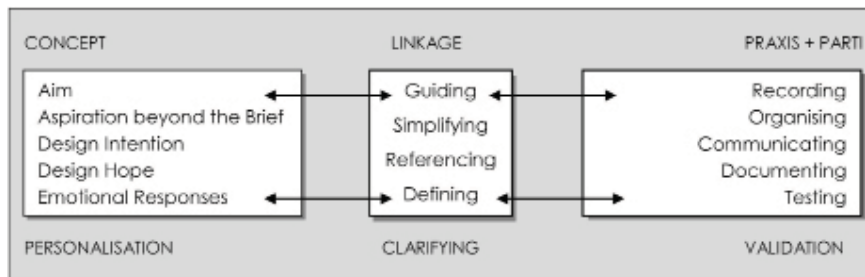


Figure 5: Stage 03 Student Description of their Use of Concept, Praxis and Parti. (Source: Author).

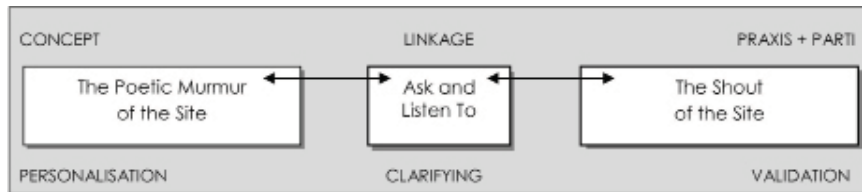


Figure 6: Stage 03 Student Description of their Linkage of Concept, Praxis, and Parti. (Source: Author).

personalization of the project and thus ensure that each of the students had a useful and clear starting point.

To reinforce this, at the start of this year, before the project began, the stage 02 students were all asked to convey their “architectural manifesto.” This was to help see what was important to each of the students and something that could be referred to throughout the year. This was not only a reference point but also the opportunity to stress to the students the importance and validity of having a voice in design. It also allowed the students to express their interests and provide a useful reservoir of ideas for the subsequent projects throughout the year.

At the start of the Seedbank project in 2010, once again for the design of a research and educational base for promoting meadowland fauna flora in a woodland setting, the students were asked to come up with one single idea or aspiration or feel for their building. It was thought appropriate to promote the use of only one idea, in the belief that a single idea if taken seriously can lead to complexity.

For the one idea, the students were encouraged to develop an aspiration for the building formed from their personal experiences or thoughts. This could be from childhood memories, an immediate instinct to the brief or site, wood land

or previous personal experience. Right away students were encouraged to draw. If unable to draw something immediately, the students were asked to list words describing their aspiration and then make diagrams from the words. Alternatively the students were asked to draw quick sketches of the site, helping to identify what exactly was important to the student. (Figure 7) Drawing as a way of finding out what was important to the student was advocated, bringing immediacy and personal feel into the process for without the “distancing and flattening” effects of computers. (Pallasmaa, 1996:12) Just as important in this regard is the practical and realistic observation made by Robbin (1994) that “drawings are the most common currency of the student-teacher exchange.”

At all times it was felt important to stress to the students the need to draw and for the students to bring their personal aspiration into the project. In this way it helped make the project more relevant to all abilities in the year group. All viewpoints and thoughts were tabled between the students and Dominic Stevens in group sittings. If initially unable to pinpoint a single aim, the previously completed students’ manifesto was used to help identify an important ambition or aspiration that could be used as a starting point in the project. This helped fire the imagination of students of all abilities across the year group. This also helped overcome a problem noted in



Figure 7: SEEDBANK—  
Site Sketch and  
Development Models—  
PC Wan 2010. (Source:  
Author).

the previous year that sometimes it was only the stronger students who found the use of concept models useful and were able to link them to their design work. However, for other students it was an element divorced from helping later design development. But, as stated by the noted architect and educator Peter Wilson (2006: p44), “an explanatory diagram is worth a thousand words in keeping a confused student on the straight and narrow.” Therefore the initial drawing can be both start and beginning of a dialogue

between student and tutor for the student in their design. It can also inform their later design work. An example is shown below (Figure 8), where the student very much wanted to make the building a continuation of a woodland path on the site.

Crucially, as the project developed the students began to realize that their aspiration was not only there to incorporate their signature into their project but also allowed further design analysis and clarification – the important link between

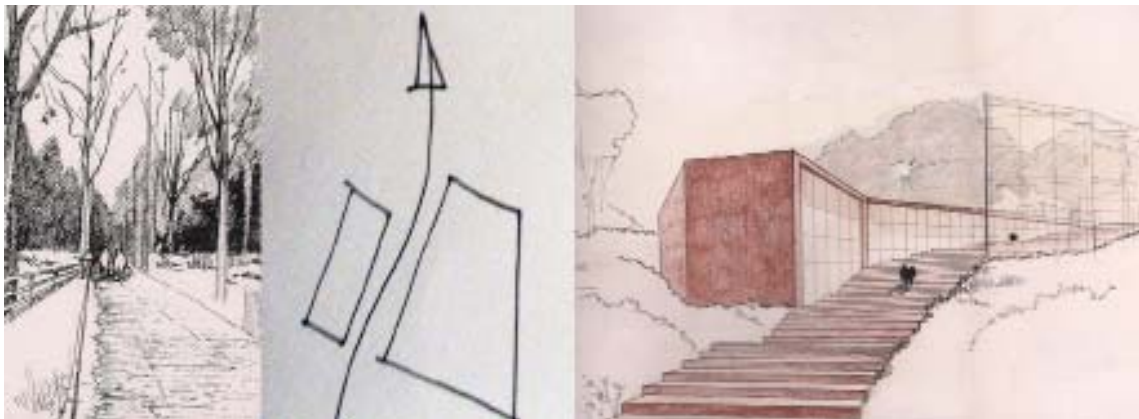


Figure 8: SEEDBANK—Site Sketch, Praxis, and Final Perspective—Julian Maney 2010. (Source: Author).

the design aids of concept and praxis and parti. If a concept is going to be referenced and a useful design generator, it makes sense that it is both personal and individual to the designer. If it is of genuine interest to the student and not a total abstract notion, it is much more likely to be meaningful and have a positive influence on the end design.

## Conclusion

In many ways the effectiveness of this approach – treating the design process like an element of “product” will only become apparent at the end of the year when the current stage 03 students are graduating and we can see if their final grades are improving. Certainly to date the average mark in the stage 02 studio has increased markedly compared to previous years. Since mastery of the design process should result in better quality design projects and higher studio marks, these are pleasing statistics. However, more immediately pleasing are the responses from the students suggesting that implementation of this strategy has given them a better understanding of the design process.

It would of course be wrong to assume that concentration on process alone is recommended. The act of design is to produce and there does need to be a final product at the end of the process. Often, the ideas and decisions made in the process will remain the sole preserve of the designer. They will not be available to the public who come afterwards to view and experience the completed work. The acclaimed architect David Chipperfield (2009:35) makes this important point, stating,

“Architecture is an unforgiving reality. It is experienced and judged in isolation without any

guide to explain or justify the decisions of the architect; it is what it is.”

In effect, what there is to see, is – what there is to see. The process itself is rarely celebrated. However, with students in the early stages of their education, it is vital to help them come to grips with the “messy” business of design. An understanding of the design process is essential. Being able to break it up and simplify it is necessary. Later on in their careers, with greater experience, they will be able to cope more quickly with the many challenges inherent in design. However, if we as tutors and educators add value to the design process in the eyes of the students, we are much more likely to encourage them to come to grips with its difficulties.

It is therefore only a start for the student in what one hopes is a long and successful career. As someone still grappling with the vagaries of the design process I can personally testify to Lawson’s (1994: 137) statement that,

“Designers bring their own intellectual programme with them in each project. In some cases this programme is a lifetime of study and development and has been laid out in books, articles and lectures.”

But at least it is a productive start.

## References

- Barnett, R (2007). *A Will To Learn – Being A student In An Age of Uncertainty*. Maidenhead: Open University Press.
- Biggs, J. (1999). *Teaching for quality learning at university*. Bury St. Edmunds: St Edmundsbury Press Ltd.
- Brown, G. (2001). *Assessment – A Guide For Lecturers*. LTSN Generic Assessment Centre York: Learning &

Teaching Support Network.

Chipperfield, D. (2009) Form Matters. Cologne: Verlag der Bunchandlung Walter Konig.

Dewey, J. (1938) Experience In Education. New York: Macmillan.

Frampton, K. (1992). Modern Architecture A Critical History. (3rd ed). London: Thames and Hudson.

Lawson, B. (1994). Design In Mind. Oxford: Butterworth Architecture.

Lawson, B. (2006). How Designers Think. Oxford: Architectural Press.

O' Cathain , C.(1982). Why Design is Logically Impossible. Design Studies. Vol 3 No.3 pp123-125.

O' Cathain, C. & Howrie, A. (1994). Architects Use of Information. Proceedings ENITD '94 Conference.

Pallasmaa, J. (1996). The Eyes of The Skin: Architecture and the Senses. (2nd ed). Chichester: John Wiley & Sons.

Race, P. (2001a). The Lecturer's Toolkit. London: Kogan Page.

Race, P. (2001b). A briefing on self, peer and group assessment. LTSN Generic Assessment Centre York: Learning & Teaching Support Network.

Robbin, E. (1994). Why Architects Draw. Cambridge Mass: MIT Press.

Salama, A. M. (2005). A process orientated design pedagogy. CEBE Transactions, Vol 2, Issue 2, Sept 2005, pp 16-31. Cardiff: Center for Education in the Built Environment.

Wade, J. (1977). Architecture, Problems & Purposes. New York: John Wiley & Sons Inc.

Wilson, P. (2006). The Diagram. The Architectural Review Issue 1302, January 2006, 44-45.

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